Wiring Instructions v2

Gatekeeper h4.0

Technical Support

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Preface

This wiring guide is for the technician or electrician responsible for wiring the Gatekeeper h4.0, door readers, and access control units as supplied by Treshna Enterprises Ltd.

This guide includes an overview of the hardware involved, example wiring diagrams for both Fail Secure and Fail Safe access control devices, emergency buttons, as well as diagnostic tests and troubleshooting.

Hardware Checklist

- ❏ Gatekeeper computer
- ❏ Power supply (basic unit provided)

You will also have, or may be supplied with:

- ❏ Desktop card reader & regular USB data cable
- ❏ Wall-mounted card reader (with Diode)

You will also need the following items:

- ❏ Battery backed power supply (12V)
- ❏ Router or network switch
- ❏ Internet connection
- ❏ Ethernet cable to connect between Gatekeeper and router, network or switch
- ❏ Door hardware as required (exit button, emergency exit, door lock, turnstyle etc) - PLEASE NOTE IT IS THE CLIENT'S RESPONSIBILITY TO ENSURE THESE ARE PROVIDED AND INSTALLED

Note: The wall-mounted card reader is wired to the door. There is a relay inside the Gatekeeper.

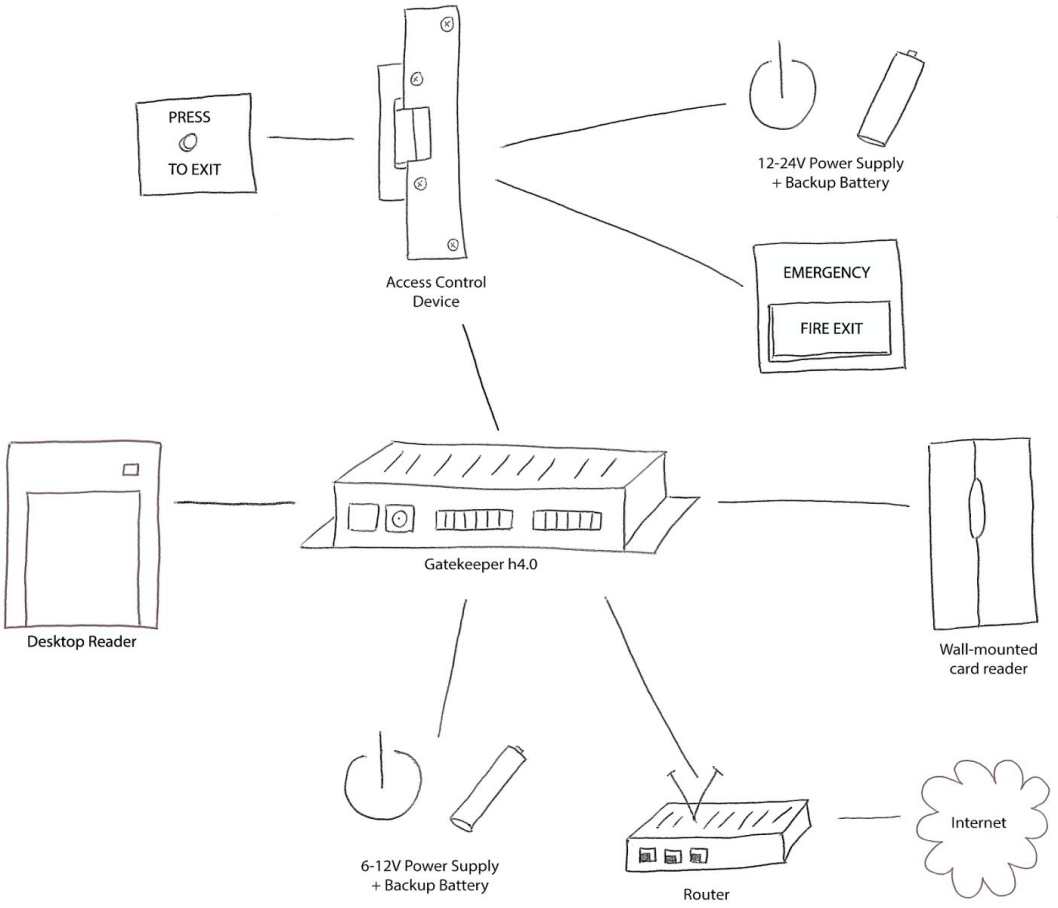
Gatekeeper Overview

The Gatekeeper h4.0 contains both the Gatekeeper computer and relay unit required to operate the access control that works with GymMaster.

The Gatekeeper will sometimes be used to operate desktop readers, which connect to the USB ports.

We strongly recommend using **Backup Battery Power** for the Gatekeeper and Card Reader to optimize the full benefits of the Gatekeeper as well as for security in the event of power failure.

It is necessary that an **Emergency Fire Exit Button** be included in your door setup for safety, and to meet any local legal requirements. An **Exit Button** is also strongly suggested.



Relay Terminals & Power Supply

Relay Terminals

These terminals are for signalling the access control device. For loads over 2A we do not recommend connecting directly, and use a secondary relay as a buffer instead.

NO Relay normally open contact

COM relay common terminal

NC relay normally closed contact

Exit buttons and Emergency Fire Exit delays are not provided by GymMaster however we have included suggested wiring below.

As access control devices are often inductive, switching off the current can cause a voltage spike on the wires to the access control, damaging the reader. A snubber should be fitted near any switch or relay contacts, for DC circuits a silicon rectifier diode such as IN4001 is well suited.

12V Supply

Connect a 12V supply capable of at least 600mA, the socket suits a 2.1x5.5mm barrel connector with the centre positive, or a screw terminal for hard wired power supplies.

The RFID Reader

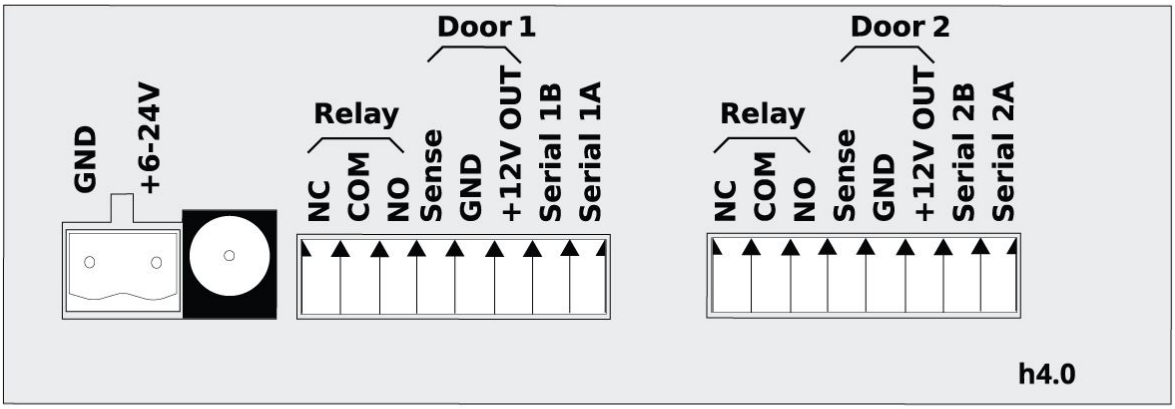
The RFID reader has several wires but only 4 of them are used by our system. The unused wires should be insulated from one another. The 4 wires that are used are coloured **red, black, white,** and **green.**

RFID Readers with Screw Terminals

Some readers have screw terminals instead of wires. Use the following key to interpret the diagrams. All other terminals are not used.

Terminal	Wire Colour	
VCC	Red	
GND	Black	
A	Green	
B	White	

Gatekeeper Inputs



Sample Wiring Diagrams

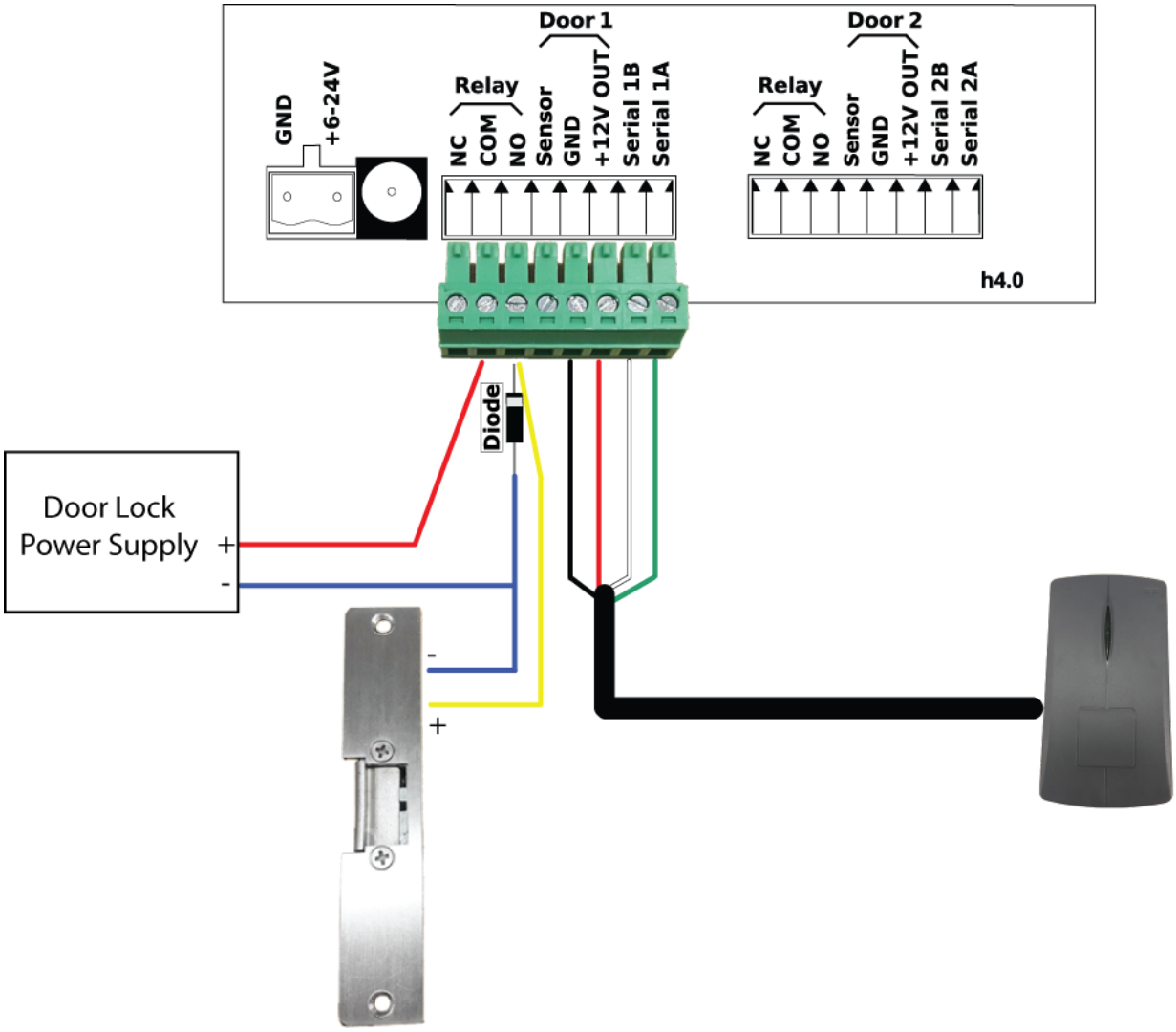
These wiring diagrams are intended only as examples of how the relay unit and RFID device may be installed. Actual installation wiring may differ.

The difference between fail secure and fail safe electronic locks are as follows:

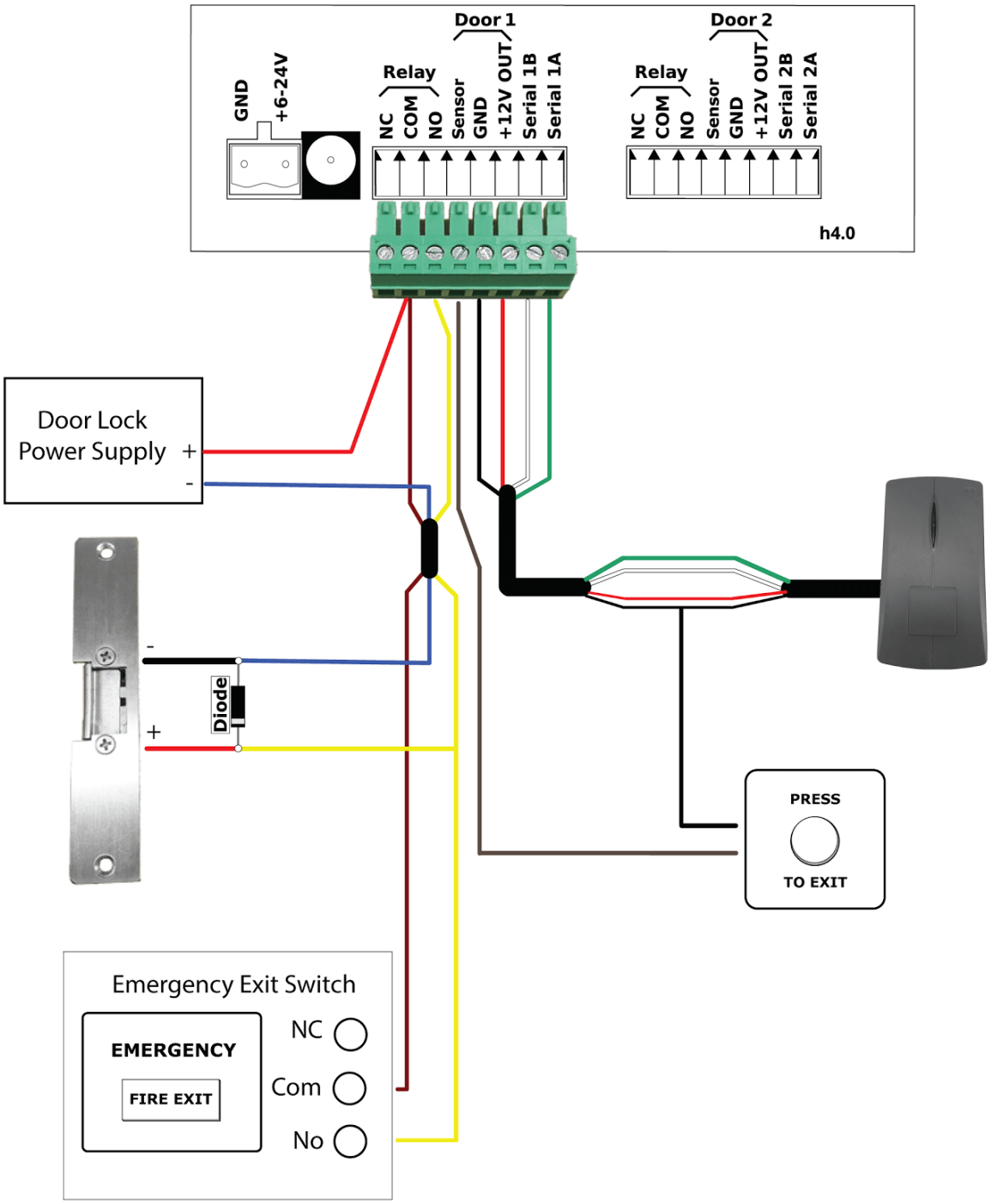
Fail secure locks will lock the door when the power goes off

Fail safe locks will leave the door unlocked when the power goes off.

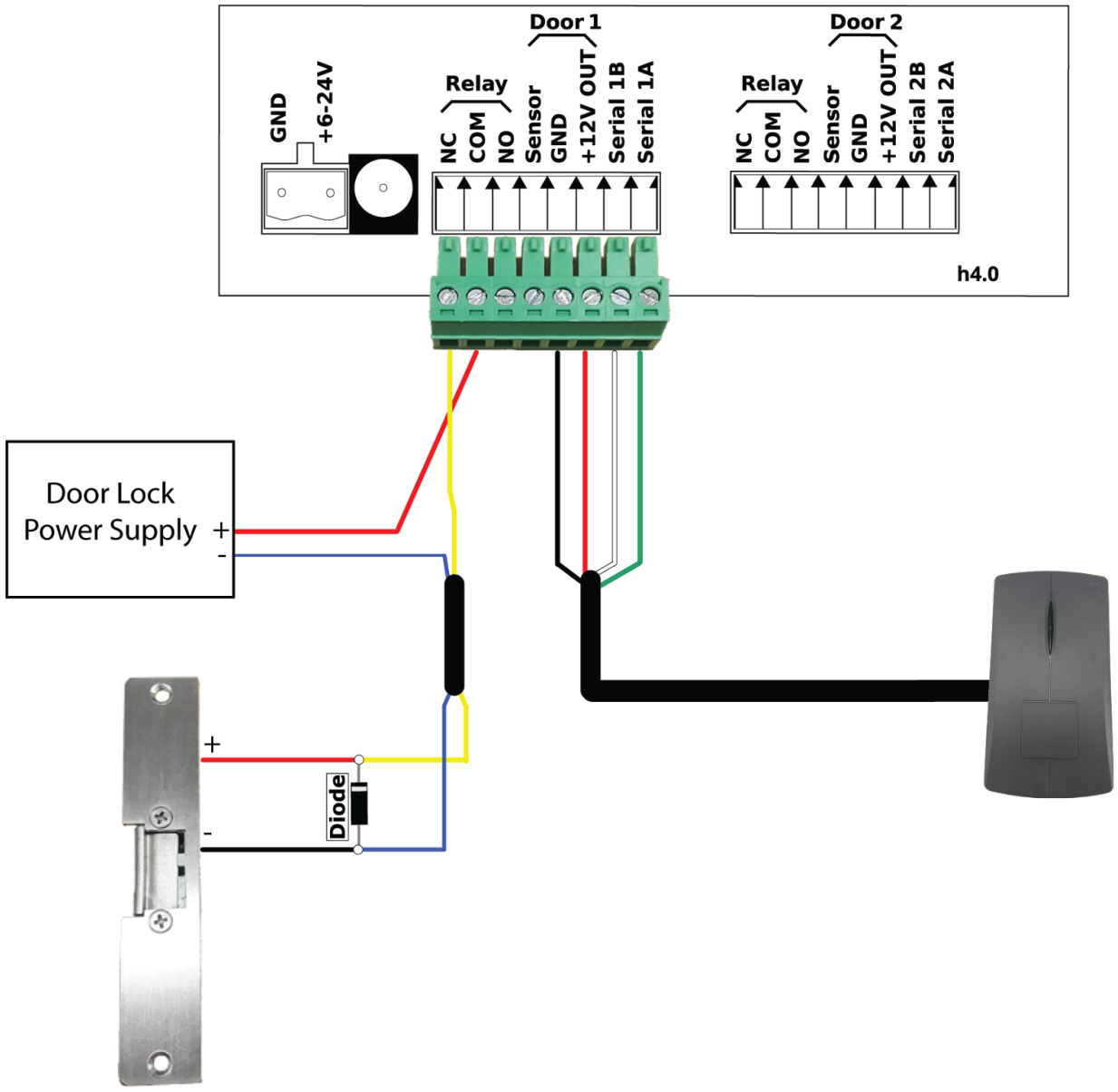
Fail-Secure


Door 1
Door 2
GND
+6-24V
Relay
NC
COM
NO
Sensor
GND
+12V OUT
Serial 1B
Serial 1A
Relay
NC
COM
NO
Sensor
GND
+12V OUT
Serial 2B
Serial 2A
h4.0
Diode
Door Lock
Power Supply
+
-
-
+

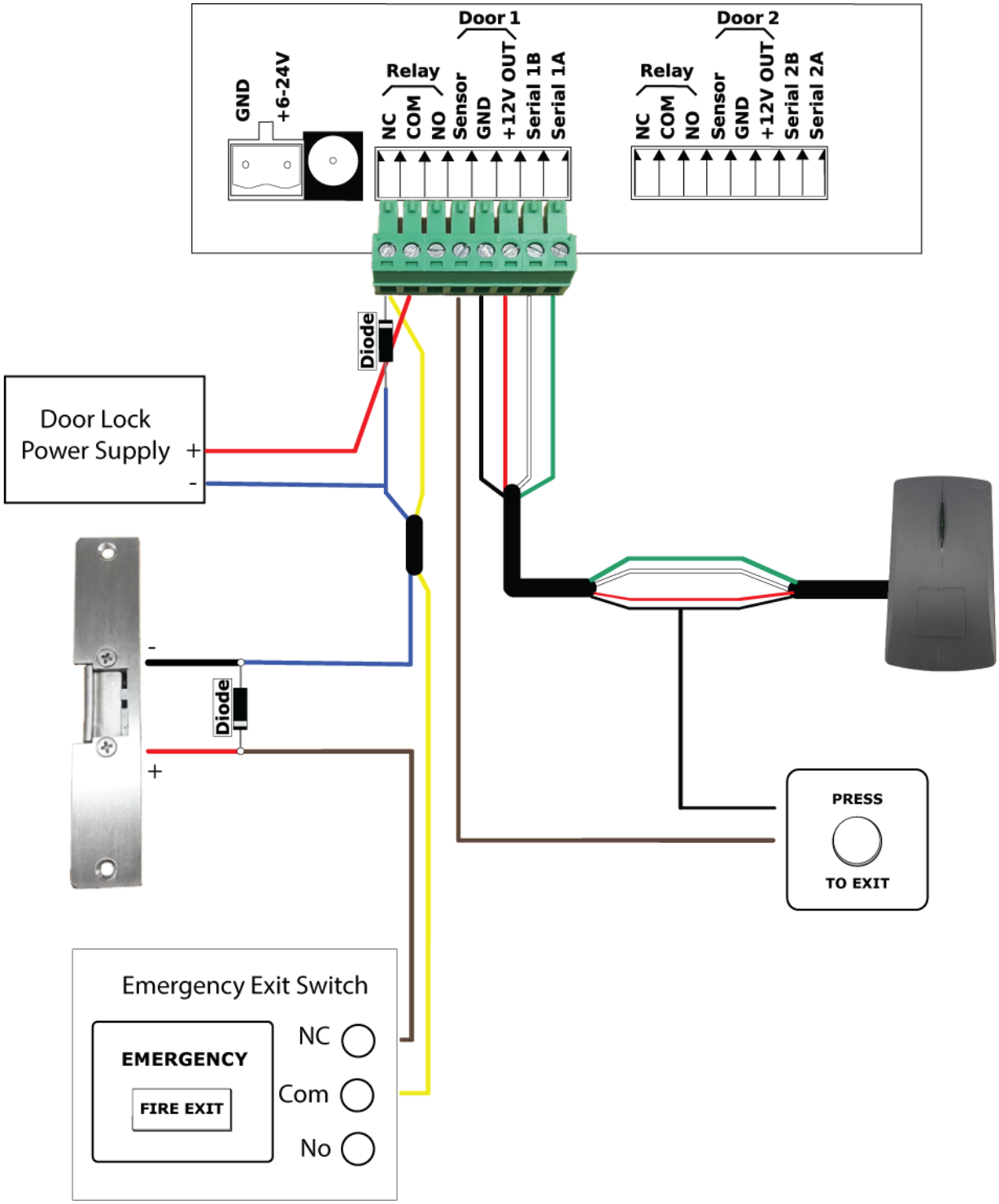
Fail-Secure with Emergency Exit



Fail-Safe


Door 1
Door 2
GND
+6-24V
Relay
NC
COM
NO
Sensor
GND
+12V OUT
Serial 1B
Serial 1A
Relay
NC
COM
NO
Sensor
GND
+12V OUT
Serial 2B
Serial 2A
h4.0
Door Lock
Power Supply
+
-
+
-
Diode

Fail-Safe with Emergency Exit



Combinations of Relay Units

There are several useful ways in which multiple relay units can be interconnected. In these illustrations the connections to the reader and PC are not shown.

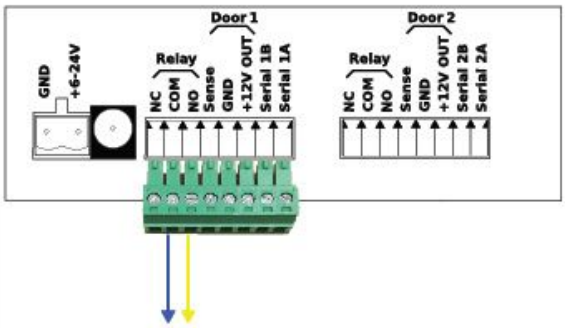
Bi-Directional

When you want to have readers both sides of the door, you need to combine the relay contacts. These wiring patterns can be used in combination with the power supply sharing wiring pattern above. The wiring pattern you should use depends on which relay contacts are being used.

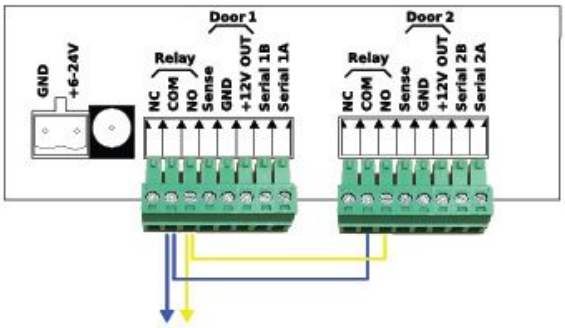
Normally Open Contacts

In arrangements where the normally open (NO) contacts are used, wire the relays in parallel.

Change this:

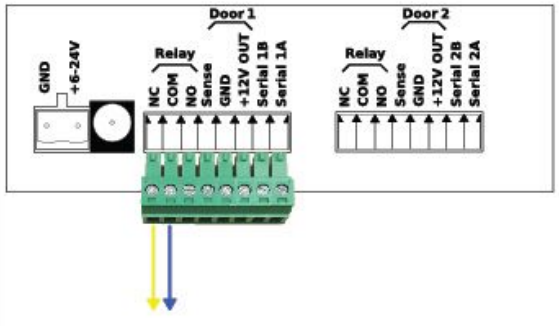


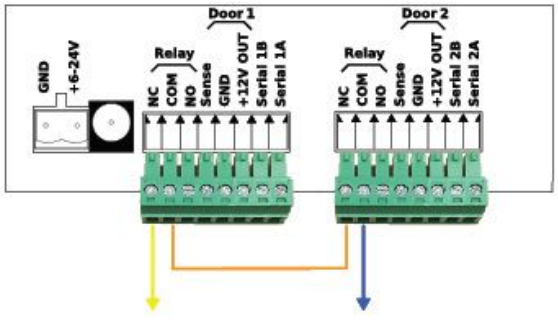
To this:



Normally Closed Contacts

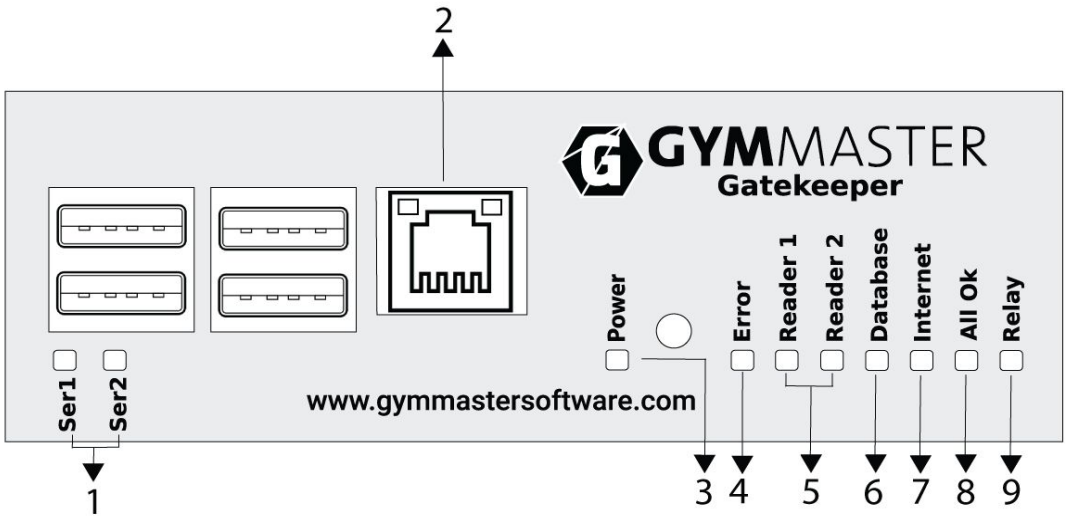
In arrangements where the normally closed (NC) contacts are used, wire the relays in series.





Gatekeeper Status

The front of the Gatekeeper h4.0 makes it easy to diagnose whether there is a problem, and the nature of any such problems.



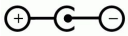
What Do the Lights Mean?

Ref	Light	Activity	Indicates
1	Ser1 Ser2	Flickering/Off	Flickers when the Gatekeeper is able to talk to the attached readers
2	Ethernet	Orange & Green On/Off	Network connection (both should be on)
3	Power	On/Off	Power to the Gatekeeper unit
4	Error	Red/Off	There is an error
5	Reader 1 Reader 2	On/Off	Reader/s are connected
6	Database	On/Off	Connection to the cloud server
7	Internet	On/Off	Internet Connection
8	All OK	On/Off	Everything is working as it should be.
9	Ready	On/Flickering	Should be on when working, but will flicker when there is RFID activity via the access control

Troubleshooting

Gatekeeper's Power Button is Not Turning On

The Gatekeeper's power LED should turn on when it is connected to a power supply. If it is **not** turning on when it is plugged in then:

- Test the power supply by disconnecting it and checking that it the power supply works
    - Unplug the power supply from the socket on the Gatekeeper
    - The power supplies we send have a red LED that should light up if it is working
    - If the power supply is not working, check that it is plugged into a working outlet.
- Having confirmed that the power supply works, reconnect it to the GateKeeper.
- If nothing happens, either the cable from the power supply to the Gatekeeper unit is faulty, or the plug has incorrect polarity.
    - The polarity of the plug can be changed by removing the tip and rotating it 180 degrees about its long axis. The arrow should indicate this symbol: 
- If the LED on the power supply goes out, this indicates an electrical fault. It could be:
    1. A wiring fault (short circuit) somewhere on the card reader cable
    2. Something on the card reader cable is consuming too much power
    3. a bad power supply
    4. a faulty Gatekeeper unit (unlikely).

Gatekeeper's Ser1 and Ser2 Light/s are Not Turning On

When the access control units are plugged into the back of the Gatekeeper, the Ser1 & Ser2 lights should be flickering to indicate that the Gatekeeper & the access control units are talking to each other. If it is not, check either the **Reader 1** & **Reader 2** lights are on. See the next point.

Gatekeeper's Reader (1&2) LED Light/s are Not Turning On

When the access control units are plugged into the back of the Gatekeeper, the Reader 1 & Reader 2 lights should turn **green**. If they are not turning on, this indicates that the Gatekeeper is unable to see the reader. This may be due to:

- incorrect wiring
- a faulty cable

- a faulty reader

Door Reader Light is not Turning On

It should turn red immediately once connected to the Gatekeeper, which indicated that it is receiving power from the Gatekeeper. The door reader lights should be in a normal state of green. This means that the card reader software is active. If the light is not turning on, then it may be due to the reader not receiving power. Common causes are:

- incorrect wiring
- a faulty cable
- a faulty reader

Door Reader Light is Always Red

The card reading software is not active. This could be due to:

- The reader is not connected to the reader
- Misconfigured database door settings
- Misconfigured wiring

The Door Reader is Not Turning Red When Swiped

When you swipe a valid tag on the reader, the light on the reader should turn from green to red. If this does not happen, then it would be due to the following causes:

- Faulty tag
- Faulty reader
- Faulty cable
- Door has been disconnected from the Gatekeeper
- Tag has not been activated in GymMaster

The Lock is Not Releasing When Swiped

The lock should release when a valid tag is swiped at the access control. If it is not releasing, this can be caused by:

- Invalid tag associated with membership in GymMaster (eg an issue with their membership)
- Door settings set to locked in GymMaster. To unlock:
    - In the navigation bar of GymMaster, select **Visitors**, then select **Access Control**.
    - Select the door and set to **Active** (tag required), **Unlock** (door open), or **Locked** (no access for members). Click **Apply**.
- Incorrect wiring to door lock

- Faulty relay

Door Lock Not Locking

Even when a valid tag is not present, the door is not locked/remains released. Causes of this include:

- Door set to unlocked in GymMaster settings (see above issue for instructions to fix)
- Incorrect wiring to door lock or relay
- Faulty relay

Note on Power Supply

- The power supply must provide 12V DC, It is recommended that an uninterruptible power supply (UPS) is used to back it up.